ACC.14
TCT@ACC-i2 | innovation in intervention

A1034
JACC April 1, 2014
Volume 63, Issue 12

Non Invasive Imaging

TRANSCUTANEOUS AORTIC VALVE IMPLANTATION INCREASES LEFT VENTRICULAR ROTATION ASSESSED BY SPECKLE TRACKING ECHOCARDIOGRAPHY

Poster Contributions
Hall C
Saturday, March 29, 2014, 10:00 a.m.-10:45 a.m.

Session Title: Non Invasive Imaging: Advances in Aortic Valve Disease
Abstract Category: 15. Non Invasive Imaging: Echo
Presentation Number: 1102-45

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Background: Speckle tracking echocardiography has been proposed as an accurate noninvasive method for assessment of left ventricular (LV) torsion, a sensitive marker of LV function. We tested the hypothesis that transcutaneous aortic valve implantation (TAVI) performed in patients with severe symptomatic aortic stenosis and preserved contractility improves LV torsion assessed by speckle tracking.

Methods: Eighteen patients with severe symptomatic aortic stenosis and preserved contractility (LV ejection fraction 58±4%) underwent a complete echocardiographic study 1 day before and 5 days after TAVI procedure. In nine patients a permanent pacemaker was implanted due to atrioventricular conduction disturbances. With the use of short axis images at the apical and basal levels of LV, speckle tracking - derived LV rotation curves were obtained at both levels and torsion was estimated as the difference between apical and basal rotation at isochronal points. The cycle length-corrected time to peak rotation or peak torsion was calculated as the ratio of time to peak rotation or peak torsion to cycle length.

Results: Values of apical rotation were higher after TAVI compared to preprocedural values (pre TAVI: -2.6±0.6°, post TAVI: -4.6±0.6°, $p<0.05$). There was no significant difference regarding basal rotation, while LV torsion tended to increase after TAVI (pre TAVI: -6.8±0.5°, post TAVI: -8.5±0.8°, $p\sim0.10$. Furthermore, the cycle length-corrected time to peak rotation at both base and apex, as well as time to peak torsion were reduced after TAVI (0.34±0.05 vs 0.45±0.03, $p<0.05$, 0.28±0.03 vs 0.48±0.03, $p<0.001$, 0.36±0.05 vs 0.49±0.03, $p<0.05$ respectively).

Conclusions: In patients with severe symptomatic aortic stenosis and preserved contractility, TAVI leads to a statistically significant increase of LV apical rotation and a tendency of LV torsion to increase as demonstrated with speckle tracking echocardiography. Furthermore, LV rotation is completed earlier in the cardiac cycle. In conclusion, TAVI improves LV rotation despite a possible attenuating effect of right ventricular pacing.